PRODUCT ENGINEERING

PUBLISHED MONTHLY

McGRAW-HILL PUBLISHING COMPANY, INC. 330 West 42d Street, New York, N. Y.

INDEX TO VOLUME 11

January to December, 1940

A

AIRCRAFT:
- Transparent plastic sheets in aircraft. G. P. Young....*127
- Spot welded aluminum aircraft structures. C. W. Dodge....*388
- Steel tube fuselages. Thompson & Lowe, pt. 1, *436; pt. 2, *513; pt. 3..*549

Aluminum bronze. W. W. Edens....*112

AUTOMOBILES:
- Automobiles of 1941....*465, *498
- Buick bearings....*484
- Chrysler automatic drive....*466
- Nash Ambassador....*474

B

Beams, cantilever. C. C. Street.... *18
Brake toggle for tractors. Webber & Swansen....*448
Brazing aluminum alloys. A. H. McGraw.*176
Brazing, redesigning for furnace. Webber and Swansen, pt. 1, *448; pt. 2..*518
Bushings, standards for brass. A. C. Rasmussen (Ref. Bk. Sheets).... 337

BOOK REVIEWS:
- Aerosphere 1939—Angle 534
- Aircraft Design—Needham 96
- American Machinists' Handbook—Colvin and Stanley.... 192
- Applied Mechanics—Poorman 432
- 1939 A.S.T.M. Standards.... 144
- Cast Metals Handbook, 1940 Edition.. 239
- Chemicals of Commerce—Snell and Snell 239
- Construction of Nomographic Charts—Mavis 144
- Design This Day—Teague.... 239
- Dictionary of Metals and Their Alloys—Camm 534
- Die Castings—Street 432
- Diesel Engines, Theory and Design—Degler 96
- Electric Power Engineers' Handbook—Ibbetson 384
- Engineering Mechanics — Timoshenko and Young 534
- Engineers and Engineering Renaissance—Parsons 336
- Graphic Presentation—Brinton 45
- Handbook of Mathematical Tables and Formulas—Burington 584
- Industrial Design—Van Doren.... 192
- Machine Design—Maleev 144
- Machine Design Drawing Room Problems—Albert 336
- Mechanics Applied to Vibrations and Balancing—Thornton 384
- Metals—Carpenter and Robertson.... 432
- Mills' Materials of Construction—Rader 45
- Modern Steels—Thum 384
- Number—Dantzig 96
- Pageant of Electricity—Morgan.... 239
- Patent Fundamentals—Schapp 96
- Physical Examination of Metals—Chalmers 336
- Physics—Wessel 192
- Plastics in Engineering—Delmonte.... 336
- Practical Mechanics and Strength of Materials—Leigh and Mangold.... 432
- Principles of Mechanism—Dyson.... 584
- Problems in Mechanics—Karelitz.... 45

- January 1– 48
- February 49– 98
- March 99–146
- April 147–194
- May 195–242
- June 243–290
- July 291–338
- August. 339–386
- September 387–434
- October 435–488
- November 489–536
- December 537–586

*ILLUSTRATED

- Public Speaking for Technical Men—Tucker 45
- Silver in Industry—Addicks.... 534
- Story of Superfinish—Swigert.... 384
- Technical Drafting—Schumann 584
- Theory and Design of Springs—Cousins 144
- Theory of Plates and Shells—Timoshenko 584
- Working Stresses—Marin 584

C

Cams, design analysis. W. H. Sherter, Jr., pt. 1, *223; pt. 2....*264

CASTINGS:
- Alloy castings. C. H. Lorig.... 317
- Aluminum alloy castings.... *28
- Cast irons. C. H. Lorig....*209
- Cast Steel. C. H. Lorig....*258
- Die cast or sand cast. Herbert Chase, pt. 1, *53; pt. 2....*165

CAUSES AND CURES:
- Examples of design failures, etc. *411, *445, *503, *559

Chrysler's new laboratory....*314
Cleaners for metal surfaces.... 359
Condenser circuits for suppressing d.c. arcs. Suits & Van Lund....*206

CONSTRUCTION TYPES AND ASSEMBLY METHODS:
- Aluminum alloy castings.... *28
- Brazing aluminum alloys. A. H. McGraw *176
- Designed for welding. V. R. Willoughby *100
- Die cast or sand cast. Herbert Chase, pt. 1, *53; pt. 2....*165
- Redesigning die castings to save needless expense. P. F. Schneider....*570
- Redesigning for furnace brazing. Webber & Swansen, pt. 1, *448; pt. 2....*518
- Steel stitching *148
- Steel tube fuselages. Thompson & Lowe, pt. 1, *436; pt. 2, *513; pt. 3..*549
- Stuffing boxes. A. Brothman, pt. 1, *417; pt. 2....*520
- Transparent plastic sheets in aircraft. G. P. Young....*127

Control:
- A.C. and d.c. motor control (Ref. Bk. Sheets) *288
- Crankshafts—dampers and suppressors for controlling torsional vibrations in crankshafts. D. Gerdan, pt. 1, *25; pt. 2 .... *57

D

Dampers and suppressors for crankshafts. D. Gerdan, pt. 1, *25; pt. 2.... *57

DESIGN CALCULATIONS AND STRESS ANALYSIS:
- Allowable eccentric loads on fillet welds. E. H. Eberhardt (Ref. Bk. Sheets) *241
- Belleville springs for thrust loaded spindles. W. W. Boyd.... *66
- Cam design analysis. W. H. Shorter, Jr., pt. 1, *223; pt. 2....*264
- Cantilever beam deflections. C. C. Street *18
- Chain drive calculations.... *2
- Chain drives, effect of centrifugal force. Binder, Bolz, Bremer....*118
- Chain drive observations. E. S. Ault..*230
- Drum and sheave design for wire ropes. F. L. Spangler.... 13
- Fatigue strength. O. J. Horger, pt. 1, *490; pt. 2....*562
- Rigid frames. O. F. Kendler....*121
- Shocks and impacts. Frederick Franz.*501
- Stress-strain analysis by brittle lacquer coatings *266
- Velocity-graph analysis. H. E. Golber.*311
- Vertical shaft design. A. Brothman..*159
- Vibratory stresses. F. T. Hague....*174
- Wormwheel drives—load factors and their influence on design....*538

DESIGN DESCRIPTIONS:
- Adjustable speed drive....*399
- Agitator drive *10
- Aircraft fuel pump.... *9
- Automobiles of 1941....*465, *498
- Bilge pump *301
- Bottle washer and sterilizer....*398
- Breaching machine *202
- Bucyrus-Erie shovel *396
- Cletrac tractor *111
- Concrete pump *104
- Crawler type excavator....*108
- Developing machine *107
- Dictation recorder *109
- Diesel-electric switchers *156
- Domestic stoker *8
- Dough divider *545
- Drum reconditioner *300
- Earth drill for U. S. Army....*542
- Electric coupling for diesel drive....*157
- Electric iron with automatic stand—steps in modern design. J. C. Fagan.*404
- Float switch with Alnico magnet....*301
- Flow interlock valve....*544
- Gasoline pump with plastic illuminated dial *347
- Hand stapler....*254; *349
- Harvester thresher *200
- Heading machine has parts of alloy cast iron *494
- Heat distributor unit....*107
- Hone for abrasive stones....*106
- Horizontal boring machine.... *6
- Hydraulic punch *107
- Hydroelectric turbine casing and impeller *397
- Kneadermaster mixer *302
- Laboratory mixer *398
- Lathe with electric cycle control....*154
- Lawn mower run by motor.... ..*348

L605.1 P943 652274

DESIGN DESCRIPTIONS—Continued

Leveling unit *397
Lorain shovel *110
Low voltage circuit breaker.....*158
Miniature gas engine.....*205
Missouri Eagle railway train.....*152
Motor driven lawn mower.....*205
One-piece molded chain.....*17
Oxygen generating machine.....*302
Pipe bending machine replaces I-beams with welded pipe.....*543
Portable cutter for sheet metal.....*204
Portable electric hammer.....*204
Portable glass washer.....*12
Portable hoist *251
Portable radio *251
Portable sander *11
Portable window fan.....*201
Precision tapper for aircraft work.....*344
Pressure-cast aluminum rotors.....*27
Punch and riveter.....*393
Railcar driven through hydraulic torque converter *495
Reduction crusher *252
Remote reading liquid level gage.....*399
Ring-type crusher *11
Rivet sorting equipment.....*346
Road show designs of 1940.....*71
Schick shaver *500
Sealed-beam headlamps *11
Seam welder with electronic timer....*350
Sheet metal press *254
Soap dispenser *205
Superfinisher has flexible cable drive..*545
Super-speed typewriter *158
Tempering oven *395
Thermal relay *158
Train of aluminum alloy *543
Transparent valve *302
Unit oven control for electric range....*199
Vacuum cleaner *297
Valve with renewable valve seat.....*158
Variable-speed hydraulic coupling....*10
Variable-speed lathe *349
Vertical hobber with hydro-electric drive *248
Warm air furnace.....*8
Welding set *12
Well pump *12
Design, philosophy of. C. M. Ashley..... 443
Direct current transmission. C. P. Nachod (Ref. Bk. Sheets)..... 386

DRIVES:

Chain drives, effect of centrifugal force Binder, Bolz, Bremer.....*518
Chain drive. E. S. Ault.....*230
Chain drive calculations.....*2
Chain drive observations. E. S. Ault..*230
Motor drives for vertical shafts. H. D. Seymour, pt. 2..... *32
Synchronized drives. C. W. Drake....*303
V-belt drives. R. F. Vogt.....*171
Vertical shaft design. A. Brothman..*159
Wormwheel drives *538
Drum and sheave design for wire ropes. F. L. Spangler..... 13

E

EDITORIALS:

And there shall be rumors..... 435
Blind hate and unreasoning hysteria 291
Challenge to industry's patriotism calls for plain speaking. J. H. McGraw, Jr. 387a
Cost of a crazy idea..... 195
Industry organizes for national defense. J. H. McGraw, Jr.....243a
Merit stands by itself..... 49
Not all faith is good..... 147
Patent conflict 1
Switching jobs doesn't spell progress.. 387
Technology and the war..... 243
Thanksgiving 1940 489
Wartime specifications 339
Why not honor them more often?.... 99

ELECTRIC MOTORS, CONTROLS AND DEVICES:

A.C. magnet coils. G. L. Moses (Ref. Bk. Sheets) *97
Capacitor motors. C. T. Button.....*213
Condenser circuits for suppressing d.c. arcs. Suits & Van Lund.....*206
Control of a.c. and d.c. motors (Ref. Bk. Sheets) *288
Electric eye in industry. J. A. Long..*20
Fixed resisters. Leon Podolsky.....*555
Magnet coils. G. L. Moses (Ref. Bk. Sheets) *47
Motor noise. C. E. Johnson.....*446
Permanent magnets in electrical applications *560
Synchronized motor drives. C. W. Drake *303
Thermostat design. E. K. Clark..... *16
Variable speed through electronic control *244
Engineering for defense. G. F. Nordenholt..*504
Engineering records. G. F. Burton.....*220

F-G

Fastenings:
Steel tube fuselages. Thompson & Lowe, pt. 1, *436; pt. 2, *513; pt. 3, *549
Wrench clearances. T. B. Jefferson (Ref. Bk. Sheets).....*463
Fatigue strength. O. J. Horger, pt. 1, *490; pt. 2 .....*562
Fibre, vulcainized *292

FINISHES:

Color with plastics.....*566
Finishes for industrial use. G. H. Robertson, pt. 1, 163; pt. 2, 217; pt. 3..... 269
Infra-red drying *307
Product finishes. G. H. Robertson, pt. 1, *163; pt. 2, 217; pt. 3..... 269
Stress-strain analysis by brittle lacquer coatings *266
Frames, rigid. O. F. Kendler.....*121
Glass for mechanical parts. T. J. Thompson *196

H-I

Heating units, resistance. M. M. Greer, pt. 1, *351; pt. 2.....*414

HYDRAULIC DRIVES, UNITS, CONTROLS AND DEVICES:

Hydraulic circuits. J. C. Cotner, pt. 1, *228; pt. 2, *274; pt. 3.....*412
Hydraulic fluids, pt. 1, *407; pt. 2....*450
Ideas. C. M. Ashley.....*511
Iron, electric, has automatic stand. J. C. Fagan *404

K-L

Keyway dimensions. A. C. Rasmussen (Ref. Bk. Sheets)..... 338
Lamps, infra-red drying.....*307
Lathe, cabinets, equipped with electronic speed control *244
Levers, foot operated, and pedals. Fred Adams, pt. 1, *130; pt. 2, *180; pt. 3, *322; pt. 4.....*372

LUBRICATION AND LUBRICATING DEVICES:

Automatic lubrication. W. O. Wright *60
Scrapers and wipers..... *64

M

Magnet coils, a.c. G. L. Moses (Ref. Bk. Sheets) *97
Magnet coils; proportioning and testing. G. L. Moses (Ref. Bk. Sheets)..... *47
Magnets, permanent, in electrical applications *560

MATERIALS (Metals):

Alloy castings. C. H. Lorig..... 317
Aluminum and magnesium products with corresponding federal, army, and navy, S.A.E. and A.S.T.M. specifications (Ref. Bk. Sheets)..... 535
Aluminum alloy castings.....*28
Aluminum bronze. W. W. Edens....*112
Cast irons. C. H. Lorig.....*209
Cast steel. C. H. Lorig.....*258
Magnesium for lightness. C. E. Colegrove *116
Nickel alloy steels for tractor parts. H. L. Geiger..... 67

MATERIALS (non-metallic):

Glass for mechanical parts. T. J. Thompson *196
New materials and design. G. T. Trundle, Jr. *354
Vulcanized fibre *292

MATERIALS (Plastics):

Color with plastics.....*566
Laminated phenolic. S. W. Place.....*360
Metal plated plastics. J. B. Kushner..*364
Nylon for industrial brushes.....*552
Plastics comparator (Ref. Bk. Sheets) 193
Plastics for molding..... 194
Transparent plastic sheet mountings. G. P. Yeung.....*127

MECHANICAL TRANSMISSIONS, UNITS AND PARTS:

Brass bushing standards. A. C. Rasmussen (Ref. Bk. Sheets)..... 337
Cam design analysis. W. H. Shorter, Jr., pt. 1, *223; pt. 2.....*264
Chain drive calculations..... *2
Chain drive calculations, discussions. Binder, Bolz, Bremer.....*118
Dampers and supporters for crankshafts. D. Gerdan, pt. 1, *25; pt. 2.. *57
Drum and sheave design for wire ropes. F. L. Spangler..... 13
Motor drives for vertical shafts. H. D. Seymour, pt. 2..... *32
Pedals and foot operated levers. Fred Adams, pt. 1, *130; pt. 2, *180; pt. 3.*322
Precision parts. Dumaine and Cedarholm *260
Stuffing boxes. A. Brothman, pt. 1, *417; pt. 2.....*520
V-belt drives. R. F. Vogt.....*171
Wire rope, tackle blocks. A. C. Rasmussen (Ref. Bk. Sheets).....*145
Wormwheel drives—load factors and their influence on design.....*538

MECHANISMS AND MACHINE ELEMENTS:

Hydraulic circuits. J. C. Cotner, pt. 1, *228; pt. 2, *274; pt. 3.....*412
Motor drives for vertical shafts. H. D. Seymour, pt. 2..... *32
Pedals and foot operated levers. Fred Adams, pt. 1, *130; pt. 2, *180; pt. 3.*322
Redesigning for furnace brazing. Webber & Swansen, pt. 1, *448; pt. 2....*518
Scrapers and wipers..... *64
Stuffing boxes. A. Brothman, pt. 1, *417; pt. 2.....*520
Metal plated plastics. J. B. Kushner....*364
Motors:
Airplane motor cylinder. H. M. Webber *519
Capacitor motors. C. T. Button.....*213

N

NEW MATERIALS AND PARTS:

Actuator for micro switches, Micro Switch *94
Adhesive, plastic resin, Plaskon Co.; rubber base, B. F. Goodrich..... 581
Air compressor, Sullivan Machinery *429; pressure lubricated, Quincy Compressor *140
Air transformer for spraying, DeVilbiss Co. *236
Alloy, corrosion-resistant, Haynes Stellite 141; for gears and shafting; J. T. Ryerson 380; Cuferco, Westinghouse Electric 141
Aluminum bronze, Ampco Metals..... 189
Aluminum, chromium and nickel bonded, American Nickeloid.....*139
Ammeter, multiple range, Simpson Electric 284
Area determinator, American Instrument *333
Aridifier, Logan Engineering.....*142
Bearings, aircraft control, SKF Industries *236; aluminum alloy, Aluminum Co. 42; ball, McGill Mfg. *382; Ahlberg Bearing *188; with retainers, Fafnir Bearing 41; double row roller, Shafer Bearing 282; pulley, General Motors *332; sealed ball, Stephens-Adamson Mfg. *578; tapered roller, Timken Roller Bearing *427; water lubricated, Peerless Pump *460
Bearing cartridge units, Stephens-Adamson Mfg. *40
Bearing metal, Federal Mogul..... 427
Belting material, Fabreeka Products..*428
Blueprint machine, Vandenwood Co.. *43
Bobbin coil, Precision Paper Tube....*459
Button, spring locking, Hopkan Rivet.*380
Cable, welding, Progressive Welder....*187
Cartridge fuse, Warren Lamp..... 578
Caster, tire, General Tire & Rubber...*237
Cement, Vulcalock, B. F. Goodrich... 140
Cemented carbide, Carboloy Co..... *41
Chain, roller, Morse Chain..... *43
Chair, drafting, Hamilton Mfg.....*141
Circuit breaker, Square D Co. *581; Westinghouse Electric & Mfg.....*529
Clutch, automatic release, Conway Clutch *41; mercury, Mercury Clutch.*330
Coating, protective, Michigan Chrome 426; synthetic, for conveyor belts, B. F. Goodrich..... 139
Cold tinning compound, Glaser Lead.. 140
Compass, V & E Engineering.....*462
Conduit fittings, Adalet Mfg.....*582

9

Connector, Burndy Engineering *430; solderless, Square D Co. *237, *334; Superseal Corp. *44
Contact materials, Mallory & Co..... 139
Contactor, inclosed, Westinghouse Electric *531
Control, photoelectric, United Cinephone *282; remote for Varidrive motors, U. S. Electric Motors *283; sectionalized motor, Cutler-Hammer *580; synchronous motor, General Electric *235; vernier, Link-Belt Co. *93
Counter, electric, Production Instrument *461; mechanical, Production Instrument *382
Couplings, hose, Pittsburgh Brass Mfg. *379; swivel pipe, Syntron Co.....*284

Die sets, adjustable, S. B. Whistler & Sons *582
Dies, perforating; Whistler, S. B. & Sons 284
Diesel power units, International Harvester *285; Lister-Blackstone.....*282
Drafting machine, Drafto Co. *379; V & E Engineering *581; L. G. Wright.429
Drafting table, Hamilton Mfg.....*334
Drawing instruments, Keuffel & Esser. *42
Ductiloy changes names to N-A-X high tensile 379
Dynamotors, Eicor Inc. *94; General Electric 284

Electrode, stainless steel, Lincoln Electric 142; hard-facing, Lincoln Electric 190
Enamel, anti acid, Rogear Co. 237; baking, Liquid Plastics 582; for plastics, Sherwin-Williams 43; infra-red baking, Maas & Waldstein..... 333
Engine, air-cooled, Wisconsin Motor *458; gas, Le Roi Co. *281; gasoline, International Harvester.....*189
Engine synchronizer, Synchro-Master.*578
Erasing shield, Eugene Dietzen.....*141
Ethyl polychlorobenzene, du Pont de Nemours 142

Fan assembly, Lohman Inc..... *44
Felt, sound absorption, Felters Co.... 94
Filter, magnetic oil, S. G. Frantz.....*460
Finish, aluminum, Tousey Varnish 282; high speed grain, Maas & Waldstein 531; transparent, Glyco Products 281; Hammertone, Maas & Waldstein 461
Flame-hardening process, Farrel-Birmingham 235
Flush receptacle, duplex, Eagle Electric Mfg. *285
Friction material, Gatke Corp.....*429

Gage to measure thickness of coatings, American Instrument *93
Gear and escapement mechanism, Walser Automatic Timer.....*330
Grinder blades faced with wear resisting alloy, Fansteel Metallurgical *237

Heater, immersion, Westinghouse Electric *189, 285; E. L. Wiegand *581, *582
Hose, seamless metal, Seamlex Co.... *93

Ink stand, Eugene Dietzgen.....*238
Inks, Phillips Process..... 235

Koroseal paint, B. F. Goodrich..... 94

Lacquer, clear, Maas & Waldstein.... 428
Lamp receptacle, prefocused, American Phenolic *285
Lamps, indicating, H. R. Kirkland...*382
Light, drafting, Hamilton Mfg..... *42
Lubricating coating, Acheson Colloids. 330
Lubrication, centralized, Farval Corp..*426
Lubrication fittings, Stewart-Warner..*285
Lubricator, automatic, Bromley & Son *92; hydraulically operated, Bijur Lubricating *92; pressure, Simplex Mfg. *334
Magnetic alloy, Bell Telephone Labs..*380
Marking device, New Method Steel Stamps, Inc. *142
Meter, sound-level, General Electric *529; General Radio.....*331
Molded metal products, National Molded Products 579
Molding compound, Durez Plastic & Chemicals 142, 381
Motor, canacitor, Bodine Electric 238; Ohio Electric Mfg. *331; d.c., General Electric *580; fractional horsepower, Russell Electric 237; gasoline, Briggs & Stratton 458; gear shift, Lima Electric Motor *461; geared, Dumore Co. *42; high torque, Westinghouse Electric *461; large, explosion-proof, U. S. Electrical Motors *236; miniature, Alliance Mfg. *529; pump mount, Sterling Electric *459; pyramidal base, U. S. Electrical Motors *381; shaded pole, Emerson Electric *461; Robbins & Myers *284; Barber-Colman *138; single-phase, Fairbanks-Morse *430; two-speed geared, Walker-Turner *531; with electromagnetic clutch, Lear Avia *530
Motor end shields, U. S. Electrical Motors *138
Motor protectors, Spencer Thermostat.*138
Motor relay, Barber-Colman.....*458
Motor shunt beads, American Lava...*382
Motor starter, Colt's Patent Fire Arms.*579
Motoram, Electromarine Corp..... *92
Multi-Breaker, Square D.....*138

Nozzle, atomizing, Spraying Systems *580; corrosion resistant, Spraying Systems *281; flat spray, Spraying Systems *190; pneumatic atomizing, Spraying Systems *141
Nuts, lock, FabriSteel Products *381; Laminated Shim *380; Security Metal Products *530; safety, Lamson & Sessions *40; self-locking, Elastic Stop Nut *139; Scovill Mfg. *333; welding, Ohio Nut & Bolt.....*334

Packing, braided, Garlock Packing *332; leather, Wayne Davis *460; plastic, Crane Packing.....*579
Photoelectric experimental set, Rehtron Corp. *188
Pillow block, Dodge Mfg.....*281
Plating process, black, du Pont de Nemours 43
Potentiometer, Foxboro Co.....*235
Powder, iron, Metals Refining..... 459
Print machine, automatic, Ozalid Corp. *284
Printer, photochemical, A. B. Dick..*142
Pumps, centrifugal, Allis-Chalmers *188; coolant, Ruthman Machinery *332; Warren Steam Pump *530; "Electrifugal," Allis-Chalmers *581 hydraulic booster, American Instrument *532; rotary, G. D. Roper Corp. *237; Speedway Mfg. *461; variable displacement, Oilgear Co. *458; variable volume hydraulic; Racine Tool & Machine.....*331
Pushbutton stations, General Electric.*580

Rectifier, portable, Cassels Engineering & Machine *187; Mellaphone Corp. *460; small universal, Mellaphone Corp. *139
Relay, mercury unbreakable, Durakool Inc. *382; midget, Ward Leonard Electric *381; photoelectric, Allied Control *427; Westinghouse Electric *92; polarized, Barber-Colman *281; sensitive, Allied Control.*430
Resistors, molded, Erie Resistor *580; Hardwick, Hindle, Inc. *282; Sprague Products *381, 531
Rheostat, Ohmite Mfg. *333; direction-indicator, Ohmite Mfg.....*426
Rod, hard-facing, Haynes Stellite.... 142
Rotor, General Electric.....*235

Screw steels, Republic Steel..... 379
Selectro-Plater, Green Electric.....*139
Sensitized linen for photoprints tracing, Hunter Electro-Copyist..... 379
Shim stock, marked, Laminated Shim.*579
Sight oil window, Bijur Lubricating.. *40
Sintering powder, Charles Hardy, Inc. 190
Smoke alarm, electric eye, Photoswitch Inc. *189
Speed clip, Tinnerman Products.....*532
Speed control, Reeves Pulley.....*430
Speed increasers, Westinghouse Electric *40
Speed reducer, Brad Foote Gear Works *187; Ohio Gear *579; worm, Abart Gear & Machine *381; Janette Mfg. *283; W. H. Smith, Inc. *330; wormhelical, Jones Foundry & Machine.. *42
Speed-variator, General Electric.....*334
Spring checkers, Link Engineering & Mfg. *281
Stand, test, U. S. Electrical Motors...*531
Starter, magnetic, Trumbull Electric Mfg. *43
Steel channel, Jones & Laughlin Steel. *189
Steel, non-magnetic, Jessop Steel *428; Ryerson & Son 531; silver stainless, Chemical Foundation 141
Stop watch, electric, Precision Scientific *283
Switch, automatic transfer, Zenith Electric *44; auxiliary, Westinghouse Electric *188; control, Jefferson Electric *426; drum type master, Cutler Hammer *459; explosion proof micro, Micro Switch *428; float, Square D Co. *44; flow break motor, Hart Mfg. *283; geared-type limit, General Electric *426; high-current tap, Ohmite Mfg. *95; mercury, Durakool Inc. *41, *578; micro, housing for, Micro Switch *138; with actuator, Micro Switch *238; millibreak, Mu-Switch Corp. *379; photoelectric limit, Photoswitch Inc. *44; plugging, General Electric *282; pressure, Center & Giveen *459; reset, Mu-Switch Corp. *429; safety, Colt's Patent Fire Arms *94; sealed micro, Micro Switch *40; starter and motor disconnect, Cutler-Hammer *284; toggle, Hart Mfg. *236; with spring leaf and roller, Mu-Switch *460; with roller plunger actuator, Micro Switch *459

T-square, stainless steel, Turner Devices *582
Thermostat, Geo. Ulanet Co. *581; sentinel, Westinghouse Electric.....*283
Timer, adjustable, Taylor Instrument *428; automatic, Paragon Electric *532; automatic reset, Paragon Electric *190; interval, R. W. Cramer *578; Photoswitch Inc. *531; repeating cycle, Eagle Signal *331; welding, Eisler Electric *140; Weltronic Corp. *187
Tire, industrial, B. F. Goodrich *94; outside valve, Musselman Products.*285
Trammel, Reinhold Paege.....*282
Transformer, Acme Electric & Mfg.. *42
Transmission, four-speed, Western Mfg. *187; V-belt, Standard Transmission *458
Tubing, extruded, Irvington Varnish & Insulator *330; synthetic, B. F. Goodrich *532
Tungsten contacts, Metroloy Co..... 461

Unicord, three-wire, General Electric..*238

V-belt, B. F. Goodrich.....*529
Valve, air, C. B. Hunt & Son *582; Ross Operating Valve *141; diaphragm, Henry Valve *238; foot, White Machine Works *332; hydraulic selector, Precision Products *333; needle, Blackhawk Mfg. *429; pilot control, Ross Operating Valve *43; safety, McDonnell & Miller *427; solenoid, Automatic Switch *332; Hoppe Engineering *93; Ross Operating Valve *237; stabiliflo, Foxboro Co. *190
Variable speed drive, U. S. Electrical Motors *93
Variable speed transmission, Lenney Machine & Mfg. *283; Lewellen Mfg. *236
Vibration isolator, Johns-Manville... *331
Vibrators and controllers, Syntron Co..*140
Vibrometer, Televiso Products.....*530
Visible flow fitting, Cochrane Corp.... *41

Wax, protective, Skybryte Co..... 93
synthetic, Glyco Products..... 140
Wheels, Geneva Metal Wheel..... *95
Whiteprint machine, Ozalid Corp.....*427
Wire, aircraft, General Electric *530; wedge wire, Wedge Wire Corp.....*462
Wire rope connectors, Electroline Co. *380; wire rope fittings, Electroline Co. *189

P

PATENTS:
Case histories in patent law. H. A. Toulmin, Jr., 89, 137, 216, 329..... 422
Disclosing an invention to prove the date of invention. H. A. Toulmin, Jr. *367
Ownership of patents. H. A. Toulmin, Jr. 271
Patent searching. H. A. Toulmin, Jr.. 169
Patentability of materials. H. A. Toulmin, Jr. 23
Proposed patent laws. Karl Fenning, pt. 1, *50; pt. 2..... 125
Pedals and foot operated levers. Fred Adams, pt. 1, *130; pt. 2, *180; pt. 3, *322; pt. 4.....*372
Photo-electric cells:
Applications of the electric eye in industry. J. A. Long..... *20
Cabinet lathe equipped with electronic speed control *244
Photography:
Camera process reproduces drawings on any surface.....*377
High-speed photography applied to the study of machine performance. E. M. Watson *340
Planers, design for eliminating chatter on. T. Addison *182
Pneumatic units, controls and devices:
Pneumatic circuits. L. A. Ward, pt. 1, *255; pt. 2.....*318
Precision parts—Dumaine and Cederholm..*260

R

REFERENCE BOOK SHEETS:
A.C. Magnet coils. G. L. Moses..... *97
Allowable eccentric loads on fillet welds. E. H. Eberhardt.....*241
Aluminum and magnesium products with corresponding Federal, Army, Navy, S.A.E. and A.S.T.M. specifications 535
Brass bushing standards. A. C. Rasmussen 337
Control of d.c. and a.c. motors.....*288
Direct current transmission. C. P. Nachod 386

REFERENCE BOOK SHEET—Continued

Factors for keyway dimensions. A. C. Rasmussen *338
Helical spring selection chart. A. C. Rasmussen 433
Magnet coils. G. L. Moses..... *47
Plastics comparator 193
Plastics for molding..... 194
Resistors in parallel. C. P. Nachod..*385
Wire rope tackle blocks. A. C. Rasmussen *145
Resistors, fixed. L. Podolsky..... *555
Resistors in parallel. C. P. Nachod (Ref. Bk. Sheets) *385
Road show designs of 1940..... *71

S

Scrapers and wipers..... *64
Sewing machine of magnesium. C. E. Colegrove *161
Sewing machine pressure foot. H. M. Webber *518
Shaft design, vertical. A. Brothman..... *159
Shocks and impacts in machinery. Frederick Franz *501
Specifications:
Army and Navy. G. F. Nordenholt...*504
Aluminum and magnesium products with corresponding Federal, Army, Navy, S.A.E. and A.S.T.M. specifications 535
Springs:
Belleville springs for thrust loaded lathe spindles. W. W. Boyd..... *66
Helical spring selection chart. A. C. Rasmussen (Ref. Bk. Sheets)..... 433
Steel:
Nickel steels for tractor parts. H. L. Geiger 67
Steel stitching *148
Stuffing boxes. A. Brothman, pt. 1, *417; pt. 2 ..... *520

T

Tackle blocks for wire rope. A. C. Rasmussen (Ref. Bk. Sheets)..... *145
Thermostat design. E. K. Clark..... *16
Truck grade ability and performance based on work and power factors. A. C. Rasmussen *357
Tubing, tapered *400

V

Valves:
Hydraulic circuits utilizing cam-operated valves. J. C. Cotner, pt. 1, *228; pt. 2, *274; pt. 3..... *412
Velocity-graph analysis. H. E. Golber, pt. 1, *311; pt. 2..... *369
Vibratory stresses. F. T. Hague..... *174

W-X

War:
Engineering for defense. G. F. Nordenholt *504
S.A.E. Aeronautical Standards Board for national defense..... 509
WELDING:
Allowable eccentric loads on fillet welds. E. H. Eberhardt (Ref. Bk. Sheets) *241
Spot welded aluminum aircraft structures. C. W. Dodge..... *388
Spot welding machine for railway cars. V. R. Willoughby..... *100
Wire ropes, drum and sheave design. F. L. Spangler 13
Wrench clearances. T. B. Jefferson (Ref. Bk. Sheets) *463
X-ray tube takes radiographs..... *423

Index cross-referenced by Titles, Subjects, Authors, and Departments

INDEX OF AUTHORS

ADAMS, Fred. Pedals and foot operated levers, pt. 1, *130; pt. 2, *180; pt. 3, *322; pt. 4..... *372
Addison, T. Design for eliminating chatter on planers..... *182
Anderson, Carl P. Housing for grease pump *374
Ashley, C. M. Ideas..... *511
Philosophy of design..... 443
Ault, E. S. Some observations on chain drive *230
Austin, Paul P. Oil circuit breaker has unusual part *375

BARISH, Thomas. Ball speed reducers built as specials..... 325
Bigelow, M. H. Believes urea plastics not rated high enough..... 326
Binder, R. C. & H. A. Bolz. Discussion of chain action *118
Bolz, H. A. & R. C. Binder. Discussion of chain action *118
Bowers, H. A. Corrections in cam rise and fall formula..... 133
Simplified formula for cam rise and fall *90
Boyd, William Wallace. Belleville springs *66
Bradbury, G. V. Discussion of acceleration changes 374
Bremer, N. C. Discussion of chain action. 120
Brocken, Karl. Cabinet design..... 325
Brothman, A. Stuffing boxes, pt. 1, *417; pt. 2 ..... *520
Vertical shaft design..... *159
Burton, George F. Engineering records..*220
Button, C. T. Capacitor motors..... *213

CEDERHOLM, E. E. & Pierre Dumaine. Precision parts *260
Chase, Herbert. Die cast or sand cast, pt. 1, *53; pt. 2..... *165
Clark, E. K. Thermostat design..... *16
Colegrove, Charles E. Magnesium for lightness *116
Cotner, J. C. Hydraulic circuits utilizing cam-operated valves, pt. 1, *228; pt. 2, *274; pt. 3..... *412

DICKINSON, Stewart. Air-sealed construction of stratoliner cabin..... 36
Dodge, C. W. Spot welded aluminum aircraft structures *388
Drachman, Myron K. Trigonometric method to determine angles..... *375
Drake, C. W. Synchronized drives..... 303
Dumaine, Pierre & E. E. Cederholm. Precision parts *260

EATON, Frank L. Circular rack with single pinion *325
Eberhardt, E. H. Allowable eccentric loads on fillet welds..... *241
Edens, W. W. Aluminum bronze..... *112
Edmunds, H. M. Answers question on ball speed reducer 324

FAGAN, John C. Steps in a modern design *404
Fenning, Karl. Proposed patent laws, pt. 1, *50; pt. 2..... 125
Field, Burton. The myth and the facts of mass production 421
Franz, Frederick. Design problem involving relative motion..... *231
Shocks and impacts in machinery..... *501

GEIGER, H. L. Nickel alloy steels..... 67
Gerdan, D. Dampers and suppressors, pt. 1, *25; pt. 2..... *57
Golber, H. E. Discussion of cam design analysis 324
Velocity-graph analysis, pt. 1, *311; pt. 2 ..... *369
Greer, M. M. Resistance heating units, pt. 1, *351; pt. 2..... *414

HAGUE, F. T. Vibratory stresses..... *174
Harriman, J. K. Anything wrong with this turntable drive? *420
Horger, O. J. Fatigue strength, pt. 1, *490; pt. 2 ..... *562

JEFFERSON, T. B. Wrench clearances. *463
Johnson, Carl E. Motor noise..... *446

KALAGAIN, S. More on dampers..... 133
Kendler, O. F. Rigid frames..... *121
Kushner, Joseph B. Metal plated plastics. *364

LANE, Ken. The designers..... 421
Lamour, James J. Inlay actually cuts into wall of hard plastic..... 35
Laux, D. R. Link swings past center to lock treadle position..... *421
Long, John A. Electric eye in industry.. *20
Lorig, C. H. Alloy castings..... 317
Cast irons *209
Cast steels *258
Lowe, T. A. & J. E. Thompson. Steel tube fuselages, pt. 1, *436; pt. 2, *513; pt. 3 ..... *549

McGRAW, A. H. Brazing aluminum alloys *176
McGraw, James H., Jr. Challenge to industry's patriotism calls for plain speaking 387a
Industry organizes for national defense 243a
Miller, Norman E. Hydraulic fluids, pt. 1, *407; pt. 2..... *450
Moses, Graham Lee. A.C. magnet coils... *97
Effect of temperature on resistance of copper wire in magnet coils..... 132
Magnet coils *47

NACHOD, Carl P. Direct current transmission 386
Effect of temperature on resistance of copper wire in magnet coils..... *132
Resistors in parallel..... *385
Newhouse, R. C. Correction for crusher shaft bearing *375
Nordenholt, George F. Engineering for defense *504

PESQUEIRA, J. J. Centrifugal tensions in transmission chains..... *230
Place, S. W. Laminated phenolic..... *360
Podolsky, Leon. Fixed resistors..... *555

RASMUSSEN, A. C. Brass bushing standards 337
Factors for keyway dimensions..... *338
Helical spring selection chart..... 433
Truck grade ability..... *357
Wire rope tackle blocks..... *145
Robertson, Gordon H. Product finishes, pt. 1, 163; pt. 2, 217; pt. 3..... 269

SAVAGE, W. T., Jr. Selecting bearing seals 183
Seymour, H. D. Motor drives for vertical shafts, pt. 2..... *32
Schneider, P. F. Redesigning die castings to save needless expense..... *570
Shorter, Wade H., Jr. Cam design analysis, *223; pt. 2..... *264
Reply to comments on cam design analysis 376
Smith, A. V. Effect of temperature on resistance of copper wire in magnet coils 132
Smith, H. E. Can you work this one?..36, 91, 134, 184, 232, 278, 326, 376, 422
Smith, N. V. Problem in cabinet styling..*276
Southwick, Laurence F. Short-cut mathematics solves flagpole problem.... *35
Spangler, F. L. Drum and sheave design.. 13
Steensen, A. P. Cabinet desin..... 326
Street, C. C. Cantilever beams deflections. *18
Suits, Dr. C. G. & J. A. Van Lund. New condenser circuits *206
Swansen, T. L. & H. M. Webber. Redesigning for furnace brazing, pt. 1, *448; pt. 2..... *518

TAME, J. S. Scrapers and wipers..... 326
Tatarinoff, Victor. Relative opening of circular orifices 133
Thompson, James E. & T. A. Lowe. Steel tube fuselages, pt. 1, *436; pt. 2, *513; pt. 3..... *549
Thompson, T. J. Glass for mechanical parts *196
Toulmin, H. A., Jr. Case histories in patent law.....89, 137, 216, 329, 422, 528
Disclosing an invention..... *367
Ownership of patents..... 271
Patent searching 169
Patentability of materials..... 23
Trundle, George T., Jr. Materials and design *354

VAN LUND, J. A. & Dr. C. G. Suits. New condenser circuits *206
Vogt, Robert F. V-belt drives..... *171

WARD, L. A. Pneumatic circuits for controlling and operating machine cycles, pt. 1, *255; pt. 2..... *318
Watson, E. M. High speed photography..*340
Webber, H. M. & T. L. Swansen. Redesigning for furnace brazing, pt. 1, *448; pt. 2..... *518
Wesert, Samuel. Flywheel substitute?.... 325
Willoughby, V. R. Designed for welding..*100
Wright, Warren O. Automatic lubrication.*60

YOUNG, Gerald P. Transparent plastics designs for mounting sheets.....*127